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10/727,485	12/05/2003	Karel Hajmrle	T8-467813US	2078

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GOWLING LAFLEUR HENDERSON LLP
SUITE 1600, 1 FIRST CANADIAN PLACE
100 KING STREET WEST
TORONTO, ON M5X 1G5
CANADA

EXAMINER

LANG, AMY T

ART UNIT	PAPER NUMBER
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3731

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/727,485	Applicant(s) HAJMRLE ET AL.	
	Examiner AMY T. LANG	Art Unit 3731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-39, 44-52, 54, 55, 72 and 73 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-39, 44-52, 54, 55, 72, and 73 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. **Claim 47** is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 47 fails to further limit claim 44.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 27-39, 44-52, 54, 55, 72, and 73** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 27 and 44 recite wherein the binder is originally a water dispersible binder. However, the instant specification does not support this limitation. Claims 28-39, 45-52, 54, 55, 72, and 73 are dependent on claims 27 and 44 and therefore are also not supported by the specification.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims 27, 29, 38, 39, 72, and 73** are rejected under 35 U.S.C. 103(a) as being unpatentable over Heath (US 3,051,586) in view of Sato et al. (US 4,233,254)

With regard to **claims 27, 29, 38, 39, and 72**, Heath discloses a lubricant (see entire document) in the form of a coating or film applied by spraying (column 1, lines 10-13; column 3, lines 1-14). The lubricant is comprised of organic or inorganic dispersible binders and solid lubricants including graphite, molybdenum disulfide, boron nitride, and tungsten disulfide (column 1, lines 16-20; column 3, lines 18-33). The total amount of solid lubricant particles in the composition is disclosed as 80 parts by wt (Example 2, column 5). The total amount of resin binder is disclosed as 101.2 parts by wt (Example 2, column 5). Therefore the ratio of solid lubricant particles to binder is 0.79 (=80/101.2), which clearly overlaps the instant range of 19:1 to 1:19. Since Heath

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discloses the use of either an organic or inorganic binder, and furthermore since the reference does not constrain the amount of inorganic binder to any particular value, it would have been obvious to use an inorganic binder in the same amount as the organic resin binder absent evidence to the contrary.

By adding 80 parts by wt of solid lubricant in a mixture comprised of a total of 1034.3 parts by wt, the amount of solid lubricant in the total mixture is 7.73% (Example 2, column 5). Therefore, the composition contains from 5 to 60 wt% solids.

Heath discloses the addition of other components to the composition including a wetting agent and zinc chromate powder, where either one would act as a filler (Example 2, column 5). These components are also added in amounts less than 40 volume% of the solids, which clearly overlaps the instant claims.

Heath discloses, in the method to produce the lubricant composition, the addition of water to the binder and solid lubricant mixture (column 3, lines 11-14). The mixture is then milled to a desired particle size cut.

However, Heath is silent as to the specific method to mill the mixture.

Sato et al. (hereinafter Sato) discloses a specific method to mill a solid lubricant and binder mixture (column 2, lines 45-67). Specifically, the mixture is particularized by first granulating and then drying into agglomerates (column 3, lines 60-65). Next, the dried particles are classified by sieving in the usual manner wherein the agglomerates are classified by size into an undersize particle size, a desired particle size, and an oversize particle size fraction (column 4, lines 12-39). The undersize particle fraction

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and oversize particle fraction are then granulated again and dried again to obtain the desired fraction (column 4, lines 23-28).

Sato teaches the mixture is dried at a variety of temperatures, specifically from 50 to 70 degrees Celsius (column 3, line 60 through column 4, line 10). It is the examiner's position that these temperatures are sufficient to render the binder non-dispersible. Additionally, Sato discloses the final mixture is heated to cure and harden the mixture (column 4, lines 59-65). This would also render the binder non-dispersible.

Sato discloses this method advantageously allows for 90% recovery of the starting mixture (column 5, lines 40-58). Therefore, it would have been obvious at the time of the invention for Heath to utilize the advantageous method disclosed by Sato to mill the mixture to the desired particle size cut.

With regard to **claim 73**, Sato teaches the produced agglomerates are rounded in shape (column 5, lines 38-39).

7. **Claims 31 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Heath (US 3,051,586) in view of Sato (US 4,233,254) and Dorfman et al. (US 5,506,055).

Heath in view of Sato discloses a method of producing solid lubricant agglomerates wherein a solid lubricant, a binder, and water are mixed. The solid lubricant is specifically disclosed as molybdenum disulfide, tungsten disulfide, or boron nitride and rendered non-dispersible by heating (column 3, lines 20-33 of Heath; column 3, line 60 through column 4, line 10 and column 4, lines 59-65 of Sato).

However, neither Heath nor Sato discloses the solid lubricant as hexagonal boron nitride.

Dorfman et al. (hereinafter Dorfman) teaches that hexagonal boron nitride is the conventional form of boron nitride (column 3, lines 11-12). Since Heath discloses boron nitride as the solid lubricant and Dorfman teaches the conventional form is well known in the art, it would have been obvious to one of ordinary skill in the art at the time of the invention for Heath to utilize hexagonal boron nitride as the solid lubricant.

8. **Claims 27-30, 39, 72, and 73** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US 4,039,337) in view of Sato (US 4,233,254).

With regard to **claims 27, 29, 30, 39, and 72**, Brown et al. (hereinafter Brown) discloses a lubricating coating composition (see entire document) comprised of an aqueous mixture of solid lubricants including graphite, boron nitride, and tungsten disulfide and a silicate binder (column 2, lines 45-65). The amount of solid lubricant is disclosed from 5 to 70 wt%, while the binder is disclosed from 10 to 40 wt% (column 3, lines 16-19, 35-38). Therefore, the ratio of solid lubricant to binder clearly overlaps the instantly claimed range of 8:2. The total amount of solid lubricant in the composition is disclosed as 25.4 wt%, so that 5 to 60 wt% solids are present in the composition (Example 1, column 5).

Furthermore, Brown discloses additional components in the composition including thixotropic agents, which inherently act as fillers (column 4, lines 57-59).

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These fillers are in an amount less than 40 volume% of the solid lubricants (Example 1, column 5).

Brown teaches the composition as bound to a metal by a spraying process (Example III, column 6). The mixture is also milled to a desired particle size cut (column 5, lines 27-28).

However, Brown is silent as to the specific method to mill the mixture.

Sato et al. (hereinafter Sato) discloses a specific method to mill a solid lubricant and binder mixture (column 2, lines 45-67). Specifically, the mixture is particularized by first granulating and then drying into agglomerates (column 3, lines 60-65). Next, the dried particles are classified by sieving in the usual manner wherein the agglomerates are classified by size into an undersize particle size, a desired particle size, and an oversize particle size fraction (column 4, lines 12-39). The undersize particle fraction and oversize particle fraction are then granulated again and dried again to obtain the desired fraction (column 4, lines 23-28).

Sato teaches the mixture is dried at a variety of temperatures, specifically from 50 to 70 degrees Celsius (column 3, line 60 through column 4, line 10). It is the examiner's position that these temperatures are sufficient to render the binder non-dispersible. Additionally, Sato discloses the final mixture is heated to cure and harden the mixture (column 4, lines 59-65). This would also render the binder non-dispersible.

Sato discloses this method advantageously allows for 90% recovery of the starting mixture (column 5, lines 40-58). Therefore, it would have been obvious at the

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time of the invention for Brown to utilize the advantageous method disclosed by Sato to mill the mixture to the desired particle size cut.

With regard to **claim 28**, Brown teaches the liquid in the mixture is water (column 3, line 46). Additionally, Brown further teaches the binder as silicates, such as sodium silicate, potassium silicate, or lithium silicate (column 3, lines 24-38). Although Brown does not teach the silicate as hydrous aluminum silicate, specifically bentonite, fuller's earth, or montmorillonite, such are obvious variants over the silicates disclosed by Brown and therefore would have been obvious at the time of the invention. Additionally, the instant disclosure describes these silicate binders as merely preferable and does not describe it as contributing any unexpected result to the invention. As such the binders are deemed a matter of design choice (lacking in any criticality) and well within the skill of the ordinary artisan, obtained through routine experimentation in determining optimum results. Additionally, it would have been obvious at the time of the invention for the silicates to be stabilized at a temperature above 850 degrees Celsius to properly function in the mixture, absent evidence to the contrary.

With regard to **claim 73**, Sato teaches the produced agglomerates are rounded in shape (column 5, lines 38-39).

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9. **Claims 31-37, 44-55** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (US 4,039,337) in view of Sato (US 4,233,254) and Dorfman et al. (US 55,506,055).

With regard to **claims 31-37, 44-48, and 55**, Brown in view of Sato discloses a method of producing solid lubricant agglomerates wherein a solid lubricant, a binder, and water are mixed. The solid lubricant is specifically disclosed as boron nitride and rendered non-dispersible by heating (column 2, lines 61-65 of Brown; column 3, line 60 through column 4, line 10 and column 4, lines 59-65 of Sato).

However, neither Brown nor Sato discloses the solid lubricant as hexagonal boron nitride.

Dorfman et al. (hereinafter Dorfman) teaches that hexagonal boron nitride is the conventional form of boron nitride (column 3, lines 11-12). Since Brown discloses boron nitride as the solid lubricant and Dorfman teaches the conventional form is well known in the art, it would have been obvious to one of ordinary skill in the art at the time of the invention for Brown to utilize hexagonal boron nitride as the solid lubricant.

With regard to **claims 49-52 and 54**, Brown further teaches the binder as silicates, such as sodium silicate, potassium silicate, or lithium silicate (column 3, lines 24-38). Although Brown does not teach the silicate as hydrous aluminum silicate, specifically bentonite, fuller's earth, or montmorillonite, such are obvious variants over the silicates disclosed by Brown and therefore would have been obvious at the time of the invention. Additionally, the instant disclosure describes these silicate binders as merely preferable and does not describe it as contributing any unexpected result to the

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invention. As such the binders are deemed a matter of design choice (lacking in any criticality) and well within the skill of the ordinary artisan, obtained through routine experimentation in determining optimum results. Additionally, it would have been obvious at the time of the invention for the silicates to be stabilized at a temperature above 850 degrees Celsius to properly function in the mixture, absent evidence to the contrary.

Response to Arguments

10. Applicant's arguments filed 10/05/2009 have been fully considered but they are not persuasive.

Specifically, applicant argues (A) that Heath relates to spraying a continuous film onto a surface for lubrication thereof and therefore is unrelated art.

With respect to argument (A), Heath is related since both Heath and the claimed invention relate to lubricant methods. The present invention teaches use of spraying, similar to Heath (see page 3, lines 20-21 of the specification).

Specifically, applicant argues (B) that the method of Sato teaches drying temperatures from 50 to 70 degrees Celsius which would not render the binder non-dispersible.

With respect to argument (B), Applicant has not shown that such temperatures are not sufficient to render the dispersant non-dispersible.

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Specifically, applicant argues (C) that there are pronounced differences between hydrous aluminum silicate and the silicates of Brown so that one would not look to hydrous aluminum silicate from those of Brown.

With respect to argument (C), however, the instant disclosure teaches that the binder may be either hydrous aluminum silicate or sodium silicate (see original claims 13 and 20 filed 12/05/2003). Since Brown teaches sodium silicate, it would have been obvious for Brown to also use hydrous aluminum silicate. Although Applicant argues that the use of sodium silicate with the claimed invention does not produce desired results, this is not found persuasive since Applicant disclosed the use of such a component.

Specifically, applicant argues (D) that Sato discloses pulverizing to a desired particle cut wherein oversized is crushed while Applicant redisperse oversize agglomerates with undersize agglomerates to obviate the extra step of crushing and pulverizing.

With respect to argument (D), the claims are open to the additional step of pulverizing and Sato still teaches the claimed invention of redispersing the oversize and undersize agglomerates.

Specifically, applicant argues (E) that the instant disclosure does not just describe the hydrous aluminum silicates as preferable so that the obvious rejection is improper.

With respect to argument (E), the original disclosure teaches the use of several binders including hydrous aluminum silicate and sodium silicate so that each one is an obvious variant. If Applicant were to show that such compounds are not obvious variants, then such would be deemed separate inventions and proper for a restriction requirement.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMY T. LANG whose telephone number is (571)272-9057. The examiner can normally be reached on M-F 8:30am-5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anhtuan Nguyen can be reached on 571-272-4963. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

02/03/2010

/Amy T Lang/

Examiner, Art Unit 3731

/Anhtuan T. Nguyen/

Supervisory Patent Examiner, Art Unit 3731

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